

CLAIMS

[cl001] 1. A method for curing a composite material comprising the steps of:
providing a curing light that includes
a wand adapted to be grasped by a human hand for use in positioning
and manipulating the curing light,
an elongate heat sink with a proximal end and a distal end, said proximal
end being proximate said wand, said elongate heat sink having a longitudinal
axis,
a mounting platform located at said elongate heat sink distal end, said
mounting platform being adapted to have a LED chip module mounted on it, and
an LED chip module mounted on said mounting platform, said LED chip
module including
a primary heat sink, said primary heat sink having a smaller mass
than said elongate heat sink,
a well on said primary heat sink for mounting an LED chip,
an LED chip mounted in said well,
a cover that provides protective covering for said LED chip and
which permits light emitted by said LED chip to pass through it to provide
usable light exiting from said light module,
powering said LED chip with a pulsed current input at power level I in alternating
periods of generally constant intensity current input to the chip followed by periods of
rest with no current input,
permitting light to be output from the curing light at an average power output level
that resembles a continue wave output in use,
applying said light to a material to be light cured.

[cl002] 2. A method as recited in claim 1 wherein said average power output
level is greater than the power output level that would result from powering the same
chip with a continuous current input at level I instead of pulsed current input.

[cl003] 3. A method as recited in claim 1 wherein said light output from the
curing light is output at an angle of from about 30 degrees to about 150 degrees with
respect to said longitudinal axis.

[cl004] 4. A method as recited in claim 1 wherein I is from about 25 millamps to about 2 amps.

[cl005] 5. A method as recited in claim 1 wherein I is from about 350 millamps to about 1.2 amps of current.

[cl006] 6. A method as recited in claim 1 wherein I is more than about 100 millamps of current.

[cl007] 7. A method for curing a composite material comprising the steps of:
providing a curing light that includes
a wand adapted to be grasped by a human hand for use in positioning
and manipulating the curing light, said want having a longitudinal axis,
a secondary heat sink, said elongate heat sink having a longitudinal axis,
a primary heat sink attached to said secondary heat sink, and
a light emitting semiconductor chip attached to said primary heat sink,
powering said chip with a pulsed current input at power level I in alternating
periods of generally constant intensity current input to the chip followed by periods of
rest with no current input,
permitting light to be output from the curing light at an average power output level
that resembles a continue wave output in use,
applying said light to a material to be light cured.

[cl008] 8. A method as recited in claim 7 wherein said average power output
level is greater than the power output level that would result from powering the same
chip with a continuous current input at level I instead of pulsed current input.

[cl009] 9. A method as recited in claim 7 wherein said light output from the
curing light is output at an angle of from about 30 degrees to about 150 degrees with
respect to said longitudinal axis.

[cl010] 10. A method as recited in claim 7 wherein I is from about 25
millamps to about 2 amps.

[cl011] 11. A method as recited in claim 7 wherein I is from about 350 millamps to about 1.2 amps of current.

[cl012] 12. A method as recited in claim 7 wherein I is more than about 100 millamps of current.

[cl013] 13. A method for curing a composite material comprising the steps of:
providing a curing light that includes

a wand adapted to be grasped by a human hand for use in positioning
and manipulating the curing light, said wand having a longitudinal axis,

a primary heat sink, and

a light emitting semiconductor chip attached to said primary heat sink,

a plurality of epitaxial layers in said light emitting semiconductor chip,
at least one of said epitaxial layers being an active layer,

powering said chip with a pulsed current input at power level I in alternating
periods of generally constant intensity current input to the chip followed by periods of
rest with no current input,

permitting said current input to said chip to cause photons to be emitted by said
active layer of said chip,

permitting said photons to exit the curing light as light, said light output from the
curing light having an average power output level, and

applying said light to a material to be light cured.

[cl014] 14. A method as recited in claim 13 wherein said light output has an
average power level is greater than the light output power level that would result from
powering said chip a continuous current input at level I instead of pulsed current input.

[cl015] 15. A method as recited in claim 13 wherein said light output from the
curing light is output at an angle of from about 30 degrees to about 150 degrees with
respect to said longitudinal axis.

[cl016] 16. A method as recited in claim 13 wherein I is from about 25
millamps to about 2 amps.

[c1017] 17. A method as recited in claim 13 wherein I is from about 350 millamps to about 1.2 amps of current.

[c1018] 18. A method as recited in claim 13 wherein I is more than about 100 millamps of current.